In the claims :

a2 cont.

1. A flux-switching linear motor with at least two phases (P1, P2, P3), comprising a moving rig having
   a. at least two field coils (7) each surrounding a magnetic armature (8) defining moving magnetic poles, and
   b. two permanent magnets (9, 10) magnetized in opposite directions, transverse to the axis of a guidance stator tube (1), the stator tube having magnetic poles (2) disposed along at least one wall of the stator tube so as to be successively facing the moving magnetic poles during the travel of the moving rig, and
   c. means for switching the direction of the current in the coils, wherein the permanent magnets (9, 10) are disposed outside the coils and magnetized along an axis parallel to the axis of the coil, and the stator magnetic poles comprise pieces (2) made of magnetic material fixed in a guidance tube made of amagnetic material, the dimension of the magnets as measured along their magnetic axis being chosen so as to create narrow gaps to allow movement of the magnets past the stator poles.

2. The motor as claimed in claim 1, wherein the pole pieces (2) of the stator poles are fixed according to pairs, on either side of the axis of the stator tube (1), on two opposite walls thereof and the dimension of the magnets (9, 10) corresponds to the distance separating two opposite pole pieces.

3. The motor as claimed in claim 2, wherein the magnets of opposite polarity which relate to a phase are disposed symmetrically with respect to the plane containing the axis of the coil and perpendicular to the axis of the stator tube, that is to say disposed in front of and behind the coil in the direction of motion.

4. The motor as claimed in claim 2, wherein the magnets of opposite polarity which relate to a phase are disposed symmetrically with respect to the plane containing the axis of the coil and the axis of the stator tube.

5. The motor as claimed in one of claims 2 to 4, wherein the guidance tube (1) comprises a rectangular U-profile member on two opposite internal walls of which are fixed lugs or pads (2) made of magnetic material constituting the stator poles.

6. The two-phase motor with two coils as claimed in one of claims 1 to 4, wherein the axes of the coils are offset by a quarter or three quarters of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.

7. The three-phase motor with three coils as claimed in one of claims 1 to 4, wherein the axes of the coils are offset by a third or two thirds of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.

8. The motor as claimed in one of claims 2 to 4, wherein the subassemblies constituting each of the phases are articulated (14) together.

9. The motor as claimed in one of claims 1 to 4, wherein two consecutive phases share a common magnet.

10. The motor as claimed in one of claims 1 to 4, wherein the moving rig is supplied with DC current and that the means for switching the current are mounted on the moving rig.

11. The motor as claimed in one of claims 1 to 4, wherein the moving rig contains, parallel to the axis of the coils, feedthroughs (17) made of soft ferromagnetic material.

12. The motor as claimed in claim 1, wherein the moving rig comprises a magnetic short-circuit plate made of a soft ferromagnetic material (18) disposed on the face of the moving rig, parallel and opposite to the stator poles (2) in such a way as to create an image (2') of the stator poles.

13. The two-phase motor with two coils as claimed in claim 5, wherein the axes of the coils are offset by a quarter or three quarters of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.

14. The three-phase motor with three coils as claimed in claim 5, wherein the axes of the coils are offset by a third or two thirds of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.

15. The motor as claimed in claim 5, wherein the subassemblies constituting each of the phases are articulated (14) together.

16. The motor as claimed in claim 5, wherein two consecutive phases share a common magnet.

17. The motor as claimed in claim 16, wherein the moving rig is supplied with DC current and that the means for switching the current are mounted on the moving rig.

18. The motor as claimed in one of claim 17, wherein the moving rig contains, parallel to the axis of the coils, feedthroughs (17) made of soft ferromagnetic material.

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19. The motor as claimed in claim 6, wherein two consecutive phases share a common magnet.

20. The motor as claimed in claim 6, wherein the moving rig is supplied with DC current and that the means for switching the current are mounted on the moving rig.